

Description of Disclosure:

[1020] An example of a sialyltransferase that is useful in the claimed methods is CST-I from Campylobacter (see, for example, U.S. Pat. Nos. 6,503,744, 6,096,529, and 6,210,933 and WO99/49051, and published U.S. Pat. Application 2002/2,042,369). This enzyme catalyzes the transfer of sialic acid to the Gal of a Gal.beta.1,4Glc or Gal.beta.1,3GalNAc. Other exemplary sialyltransferases of use in the present invention include those isolated from Campylobacter jejuni, including the .alpha.(2,3) sialyltransferase. See, e.g, WO99/49051.

SULT 3

US-09-495-406-34

; Sequence 34, Application US/09495406

; Patent No. 6503744

; GENERAL INFORMATION:

; APPLICANT: Gilbert, Michel

; APPLICANT: Wakarchuk, Warren W.

; APPLICANT: National Research Council of Canada

; TITLE OF INVENTION: Campylobacter Glycosyltransferases for Biosynthesis of

; TITLE OF INVENTION: Gangliosides and Ganglioside Mimics

; FILE REFERENCE: 019633-000110US

; CURRENT APPLICATION NUMBER: US/09/495,406

; CURRENT FILING DATE: 2000-01-31

; PRIOR APPLICATION NUMBER: US 60/118,213

; PRIOR FILING DATE: 1999-02-01

; NUMBER OF SEQ ID NOS: 35

; SOFTWARE: PatentIn Ver. 2.1

; SEQ ID NO 34

; LENGTH: 322

; TYPE: PRT

; ORGANISM: Campylobacter jejuni

; FEATURE:

; OTHER INFORMATION: Campylobacter alpha-2,3-sialyltransferase I (cstI)

; OTHER INFORMATION: from C. jejuni OH4384

US-09-495-406-34

Query Match 75.0%; Score 1701; DB 2; Length 322;

Best Local Similarity 100.0%; Pred. No. 1.6e-158;

Matches 322; Conservative 0; Mismatches 0; Indels 0; Gaps 0;

Qy 1

MTRTRMENELIVSKNMQNIHAGNGPSLKNINYNKRLPREYDVFR CNQFYFEDKYY
LGKKI 60

|||||

Db 1

MTRTRMENELIVSKNMQNIHAGNGPSLKNINYNKRLPREYDVFR CNQFYFEDKYY
LGKKI 60

Qy 61

KAVFFNPGVFLQYHTAKQLILKNEYEIKNIFCSTFNLPFIESND FLHQFYNFFPDA
KLG 120

|||||

Db 61

KAVFFNPGVFLQYHTAKQLILKNEYEIKNIFCSTFNLPFIESND FLHQFYNFFPDA
KLG 120

Qy 121
YEVIENTLKEFYAYIKYNEIYFNKRITSGVYMCAIAIALGYKTIYLCGIDFYEGDVIY
PFE 180



Db 121
YEVIENTLKEFYAYIKYNEIYFNKRITSGVYMCAIAIALGYKTIYLCGIDFYEGDVIY
PFE 180

Qy 181
AMSTNIKTIFPGIKDFKPSNCHSKEYDIEALKLLKSIYKVNIYALCDDASILANHFPL
SIN 240



Db 181
AMSTNIKTIFPGIKDFKPSNCHSKEYDIEALKLLKSIYKVNIYALCDDASILANHFPL
SIN 240

Qy 241
INNFTLENKHNNNSINDILLTDNTPGVSFYKNQLKADNKIMLNFYNILHSDNLK
FLNK 300



Db 241
INNFTLENKHNNNSINDILLTDNTPGVSFYKNQLKADNKIMLNFYNILHSDNLK
FLNK 300

Qy 301 EIAVLKKQTTQRAKARIQNHLS 322



Db 301 EIAVLKKQTTQRAKARIQNHLS 322

SULT 4
 US-09-816-028A-48
 ; Sequence 48, Application US/09816028A
 ; Patent No. 6699705
 ; GENERAL INFORMATION:
 ; APPLICANT: Gilbert, Michel
 ; APPLICANT: Wakarchuk, Warren W.
 ; APPLICANT: National Research Council of Canada
 ; TITLE OF INVENTION: Campylobacter Glycosyltransferases for Biosynthesis of
 ; TITLE OF INVENTION: Gangliosides and Ganglioside Mimics
 ; FILE REFERENCE: 019633-000111US
 ; CURRENT APPLICATION NUMBER: US/09/816,028A
 ; CURRENT FILING DATE: 2001-03-21
 ; PRIOR APPLICATION NUMBER: US 60/118,213
 ; PRIOR FILING DATE: 1999-02-01
 ; PRIOR APPLICATION NUMBER: US 09/495,406
 ; PRIOR FILING DATE: 2000-01-31
 ; NUMBER OF SEQ ID NOS: 49
 ; SOFTWARE: PatentIn Ver. 2.1
 ; SEQ ID NO 48
 ; LENGTH: 322
 ; TYPE: PRT
 ; ORGANISM: Campylobacter jejuni
 ; FEATURE:
 ; OTHER INFORMATION: Campylobacter alpha-2,3-sialyltransferase I (Cst-I)
 ; OTHER INFORMATION: from C. jejuni OH4384
 US-09-816-028A-48

Query Match 75.0%; Score 1701; DB 2; Length 322;
 Best Local Similarity 100.0%; Pred. No. 1.6e-158;
 Matches 322; Conservative 0; Mismatches 0; Indels 0; Gaps 0;

Qy 1
 MTRTRMENELIVSKNMQNIIIAGNGPSLKNINYNKRLPREYDVFR CNQFYFEDKYY
 LGKKI 60

|||||

Db 1
 MTRTRMENELIVSKNMQNIIIAGNGPSLKNINYNKRLPREYDVFR CNQFYFEDKYY
 LGKKI 60

Qy 61
 KAVFFNPGVFLQQYHTAKQLILKNEYEIKNIFCSTFNLPFIESND FLHQFYNFFPDA
 KLK 120

|||||

Db 61
KAVFFNPGVFLQQYHTAKQLILKNEYEIKNIFCSTFNLPFIESNDFLHQFYNFFPDA
KLG 120

Qy 121
YEVIENTKEFYAYIKYNEIYFNKRITSGVYMCAIAIALGYKTIYLCGIDFYEGDVIY
PFE 180

|||||
Db 121
YEVIENTKEFYAYIKYNEIYFNKRITSGVYMCAIAIALGYKTIYLCGIDFYEGDVIY
PFE 180

Qy 181
AMSTNIKTIFPGIKDFKPSNCHSKEYDIEALKLLKSIYKVNIYALCDDSILANHFPL
SIN 240

|||||
Db 181
AMSTNIKTIFPGIKDFKPSNCHSKEYDIEALKLLKSIYKVNIYALCDDSILANHFPL
SIN 240

Qy 241
INNFTLENKHNNNSINDILLTDNTPGVSFYKNQLKADNKIMLNFYNILHSDNLIK
FLNK 300

|||||
Db 241
INNFTLENKHNNNSINDILLTDNTPGVSFYKNQLKADNKIMLNFYNILHSDNLIK
FLNK 300

Qy 301 EIAVLKKQTTQRAKARIQNHLS 322
|||||
Db 301 EIAVLKKQTTQRAKARIQNHLS 322

ESULT 5

US-10-303-162-48

; Sequence 48, Application US/10303162

; Patent No. 6723545

; GENERAL INFORMATION:

; APPLICANT: Gilbert, Michel

; APPLICANT: Wakarchuk, Warren W.

; APPLICANT: National Research Council of Canada

; TITLE OF INVENTION: Campylobacter Glycosyltransferases for Biosynthesis of

; TITLE OF INVENTION: Gangliosides and Ganglioside Mimics

; FILE REFERENCE: 019633-000111US

; CURRENT APPLICATION NUMBER: US/10/303,162

; CURRENT FILING DATE: 2002-11-21

; PRIOR APPLICATION NUMBER: US/09/816,028

; PRIOR FILING DATE: 2001-03-21

; PRIOR APPLICATION NUMBER: US 60/118,213

; PRIOR FILING DATE: 1999-02-01

; PRIOR APPLICATION NUMBER: US 09/495,406

; PRIOR FILING DATE: 2000-01-31

; NUMBER OF SEQ ID NOS: 49

; SOFTWARE: PatentIn Ver. 2.1

; SEQ ID NO 48

; LENGTH: 322

; TYPE: PRT

; ORGANISM: Campylobacter jejuni

; FEATURE:

; OTHER INFORMATION: Campylobacter alpha-2,3-sialyltransferase I (Cst-I)

; OTHER INFORMATION: from C. jejuni OH4384

US-10-303-162-48

Query Match 75.0%; Score 1701; DB 2; Length 322;

Best Local Similarity 100.0%; Pred. No. 1.6e-158;

Matches 322; Conservative 0; Mismatches 0; Indels 0; Gaps 0;

Qy 1

MTRTRMENELIVSKNMQNIIIAGNGPSLKNINYKRLPREYDVFR CNQFYFEDKYY
LGKKI 60

|||||

Db 1

MTRTRMENELIVSKNMQNIIIAGNGPSLKNINYKRLPREYDVFR CNQFYFEDKYY
LGKKI 60

Qy 61

KAVFFNPGVFLQQYHTAKQLILKNEYEIKNIFCSTFNLPFIESND FLHQFYNFFPDA
KLG 120

|||||

Db 61
KAVFFNPGVFLQQYHTAKQLILKNEYEIKNIFCSTFNLPFIESNDFLHQFYNFFPDA
KLK 120

Qy 121
YEVIENTLKEFYAYIKYNEIYFNKRITSGVYMCAIAIALGYKTIYLCGIDFYEGDVIY
PFE 180

|||||
Db 121
YEVIENTLKEFYAYIKYNEIYFNKRITSGVYMCAIAIALGYKTIYLCGIDFYEGDVIY
PFE 180

Qy 181
AMSTNIKTIFPGIKDFKPSNCHSKEYDIEALKLLKSIYKVNIYALCDDSILANHFPL
SIN 240

|||||
Db 181
AMSTNIKTIFPGIKDFKPSNCHSKEYDIEALKLLKSIYKVNIYALCDDSILANHFPL
SIN 240

Qy 241
INNFTLENKHNNNSINDILLTDNTPGVSFYKNQLKADNKIMLNFYNILHSDNLK
FLNK 300

|||||
Db 241
INNFTLENKHNNNSINDILLTDNTPGVSFYKNQLKADNKIMLNFYNILHSDNLK
FLNK 300

Qy 301 EIAVLKKQTTQRAKARIQNHLS 322
|||||
Db 301 EIAVLKKQTTQRAKARIQNHLS 322

ESULT 6

US-10-303-134-48

; Sequence 48, Application US/10303134

; Patent No. 6825019

; GENERAL INFORMATION:

; APPLICANT: Gilbert, Michel

; APPLICANT: Wakarchuk, Warren W.

; APPLICANT: National Research Council of Canada

; TITLE OF INVENTION: Campylobacter Glycosyltransferases for Biosynthesis of

; TITLE OF INVENTION: Gangliosides and Ganglioside Mimics

; FILE REFERENCE: 019633-000111US

; CURRENT APPLICATION NUMBER: US/10/303,134

; CURRENT FILING DATE: 2002-11-21

; PRIOR APPLICATION NUMBER: US/09/816,028

; PRIOR FILING DATE: 2001-03-21

; PRIOR APPLICATION NUMBER: US 60/118,213

; PRIOR FILING DATE: 1999-02-01

; PRIOR APPLICATION NUMBER: US 09/495,406

; PRIOR FILING DATE: 2000-01-31

; NUMBER OF SEQ ID NOS: 49

; SOFTWARE: PatentIn Ver. 2.1

; SEQ ID NO 48

; LENGTH: 322

; TYPE: PRT

; ORGANISM: Campylobacter jejuni

; FEATURE:

; OTHER INFORMATION: Campylobacter alpha-2,3-sialyltransferase I (Cst-I)

; OTHER INFORMATION: from C. jejuni OH4384

US-10-303-134-48

Query Match 75.0%; Score 1701; DB 2; Length 322;

Best Local Similarity 100.0%; Pred. No. 1.6e-158;

Matches 322; Conservative 0; Mismatches 0; Indels 0; Gaps 0;

Qy 1

MTRTRMENELIVSKNMQNIIIAGNGPSLKNINYKRLPREYDVFR CNQFYFEDKYY
LGKKI 60

|||||

Db 1

MTRTRMENELIVSKNMQNIIIAGNGPSLKNINYKRLPREYDVFR CNQFYFEDKYY
LGKKI 60

Qy 61

KAVFFNPGVFLQQYHTAKQLILKNEYEIKNIFCSTFNLPFIESND FLHQFYNFFPDA
KLG 120

|||||

Db 61

KAVFFNPGVFLQQYHTAKQLILKNEYEIKNIFCSTFNLPFIESNDFLHQFYNFFPDA
KLG 120

Qy 121

YEVIENTLKEFYAYIKYNEIYFNKRITSGVYMCAIAIALGYKTIYLCGIDFYEGDVIY
PFE 180

|||||

Db 121

YEVIENTLKEFYAYIKYNEIYFNKRITSGVYMCAIAIALGYKTIYLCGIDFYEGDVIY
PFE 180

Qy 181

AMSTNIKTIFPGIKDFKPSNCHSKEYDIEALKLLKSIYKVNIYALCDDASILANHFPL
SIN 240

|||||

Db 181

AMSTNIKTIFPGIKDFKPSNCHSKEYDIEALKLLKSIYKVNIYALCDDASILANHFPL
SIN 240

Qy 241

INNFTLENKHNNNSINDILLTDNTPGVSFYKNQLKADNKIMLNFYNILHSDKDNLIK
FLNK 300

|||||

Db 241

INNFTLENKHNNNSINDILLTDNTPGVSFYKNQLKADNKIMLNFYNILHSDKDNLIK
FLNK 300

Qy 301 EIAVLKKQTTQRAKARIQNHLS 322

|||||

Db 301 EIAVLKKQTTQRAKARIQNHLS 322

RESULT 7

US-10-303-118-48

; Sequence 48, Application US/10303118

; Patent No. 6905867

; GENERAL INFORMATION:

; APPLICANT: Gilbert, Michel

; APPLICANT: Wakarchuk, Warren W.

; APPLICANT: National Research Council of Canada

; TITLE OF INVENTION: Campylobacter Glycosyltransferases for Biosynthesis of

; TITLE OF INVENTION: Gangliosides and Ganglioside Mimics

; FILE REFERENCE: 019633-000111US

; CURRENT APPLICATION NUMBER: US/10/303,118

; CURRENT FILING DATE: 2002-11-21

; PRIOR APPLICATION NUMBER: US/09/816,028
; PRIOR FILING DATE: 2001-03-21
; PRIOR APPLICATION NUMBER: US 60/118,213
; PRIOR FILING DATE: 1999-02-01
; PRIOR APPLICATION NUMBER: US 09/495,406
; PRIOR FILING DATE: 2000-01-31
; NUMBER OF SEQ ID NOS: 49
; SOFTWARE: PatentIn Ver. 2.1
; SEQ ID NO 48
; LENGTH: 322
; TYPE: PRT
; ORGANISM: Campylobacter jejuni
; FEATURE:
; OTHER INFORMATION: Campylobacter alpha-2,3-sialyltransferase I (Cst-I)
; OTHER INFORMATION: from C. jejuni OH4384
US-10-303-118-48

Query Match 75.0%; Score 1701; DB 2; Length 322;
Best Local Similarity 100.0%; Pred. No. 1.6e-158;
Matches 322; Conservative 0; Mismatches 0; Indels 0; Gaps 0;

Qy 1
MTRTRMENELIVSKNMQNIHAGNGPSLKNINYKRLPREYDVFR CNQFYFEDKYY
LGKKI 60

|||||

Db 1
MTRTRMENELIVSKNMQNIHAGNGPSLKNINYKRLPREYDVFR CNQFYFEDKYY
LGKKI 60

Qy 61
KAVFFNPGVFLQQYHTAKQLILKNEYEIKNIFCSTFNL PFIESNDFLHQFY NFFPDA
KLG 120

|||||

Db 61
KAVFFNPGVFLQQYHTAKQLILKNEYEIKNIFCSTFNL PFIESNDFLHQFY NFFPDA
KLG 120

Qy 121
YEV IENLKEFYAYIKYNEIYFNKRITSGVYMCAIAIALGYKTIYLCGIDFYEGDVIY
PFE 180

|||||

Db 121
YEV IENLKEFYAYIKYNEIYFNKRITSGVYMCAIAIALGYKTIYLCGIDFYEGDVIY
PFE 180

Qy 181

AMSTNIKTIFPGIKDFKPSNCHSKEYDIEALKLLKSIYKVNIYALCDDASILANHFPL
SIN 240

|||||

Db 181

AMSTNIKTIFPGIKDFKPSNCHSKEYDIEALKLLKSIYKVNIYALCDDASILANHFPL
SIN 240

Qy 241

INNFTLENKHNNNSINDILLTDNTPGVSFYKNQLKADNKIMLNFYNILHSDNLK
FLNK 300

|||||

Db 241

INNFTLENKHNNNSINDILLTDNTPGVSFYKNQLKADNKIMLNFYNILHSDNLK
FLNK 300

Qy 301 EIAVLKKQTTQRAKARIQNHLS 322

|||||

Db 301 EIAVLKKQTTQRAKARIQNHLS 322

RESULT 8

US-10-303-128-48

; Sequence 48, Application US/10303128

; Patent No. 6911337

; GENERAL INFORMATION:

; APPLICANT: Gilbert, Michel

; APPLICANT: Wakarchuk, Warren W.

; APPLICANT: National Research Council of Canada

; TITLE OF INVENTION: Campylobacter Glycosyltransferases for Biosynthesis of

; TITLE OF INVENTION: Gangliosides and Ganglioside Mimics

; FILE REFERENCE: 019633-000111US

; CURRENT APPLICATION NUMBER: US/10/303,128

; CURRENT FILING DATE: 2002-11-21

; PRIOR APPLICATION NUMBER: US/09/816,028

; PRIOR FILING DATE: 2001-03-21

; PRIOR APPLICATION NUMBER: US 60/118,213

; PRIOR FILING DATE: 1999-02-01

; PRIOR APPLICATION NUMBER: US 09/495,406

; PRIOR FILING DATE: 2000-01-31

; NUMBER OF SEQ ID NOS: 49

; SOFTWARE: PatentIn Ver. 2.1

; SEQ ID NO 48

; LENGTH: 322

; TYPE: PRT

; ORGANISM: Campylobacter jejuni

; FEATURE:
; OTHER INFORMATION: Campylobacter alpha-2,3-sialyltransferase I (Cst-I)
; OTHER INFORMATION: from C. jejuni OH4384
US-10-303-128-48

Query Match 75.0%; Score 1701; DB 2; Length 322;
Best Local Similarity 100.0%; Pred. No. 1.6e-158;
Matches 322; Conservative 0; Mismatches 0; Indels 0; Gaps 0;

Qy 1
MTRTRMENELIVSKNMQNIHAGNGPSLKNINYNKRLPREYDVFR CNQFYFEDKYY
LGKKI 60

|||||

Db 1
MTRTRMENELIVSKNMQNIHAGNGPSLKNINYNKRLPREYDVFR CNQFYFEDKYY
LGKKI 60

Qy 61
KAVFFNPGVFLQQYHTAKQLILKNEYEIKNIFCSTFNL PFIESNDFLHQFYNFFPDA
KLG 120

|||||

Db 61
KAVFFNPGVFLQQYHTAKQLILKNEYEIKNIFCSTFNL PFIESNDFLHQFYNFFPDA
KLG 120

Qy 121
YEV IENLKEFYAYIKYNEIYFNKRITSGVYMCAIAIALGYKTIYLCGIDFYEGDVIY
PFE 180

|||||

Db 121
YEV IENLKEFYAYIKYNEIYFNKRITSGVYMCAIAIALGYKTIYLCGIDFYEGDVIY
PFE 180

Qy 181
AMSTNIKTIFPGIKDFKPSNCHSKEYDIEALKLLKSIYKVNIYALCDD SILANHFPL
SIN 240

|||||

Db 181
AMSTNIKTIFPGIKDFKPSNCHSKEYDIEALKLLKSIYKVNIYALCDD SILANHFPL
SIN 240

Qy 241
INNFTLENKHNN SINDILLTDNTPGVSFYKNQLKADNKIMLNFYNILH SKDNLK
FLNK 300

|||||

Db 241
INNFTLENKHNNNSINDILLTDNTPGVSFYKNQLKADNKIMLNFYNNILHSDKDNLIK
FLNK 300

Qy 301 EIAVLKKQTTQRAKARIQNHLS 322

|||||

Db 301 EIAVLKKQTTQRAKARIQNHLS 322

RESULT 9

US-10-735-419-48

; Sequence 48, Application US/10735419

; Patent No. 7026147

; GENERAL INFORMATION:

; APPLICANT: Gilbert, Michel

; APPLICANT: Wakarchuk, Warren W.

; APPLICANT: National Research Council of Canada

; TITLE OF INVENTION: Campylobacter Glycosyltransferases for Biosynthesis of

; TITLE OF INVENTION: Gangliosides and Ganglioside Mimics

; FILE REFERENCE: 019633-000111US

; CURRENT APPLICATION NUMBER: US/10/735,419

; CURRENT FILING DATE: 2003-12-11

; PRIOR APPLICATION NUMBER: US/09/816,028A

; PRIOR FILING DATE: 2001-03-21

; PRIOR APPLICATION NUMBER: US 60/118,213

; PRIOR FILING DATE: 1999-02-01

; PRIOR APPLICATION NUMBER: US 09/495,406

; PRIOR FILING DATE: 2000-01-31

; NUMBER OF SEQ ID NOS: 49

; SOFTWARE: PatentIn Ver. 2.1

; SEQ ID NO 48

; LENGTH: 322

; TYPE: PRT

; ORGANISM: Campylobacter jejuni

; FEATURE:

; OTHER INFORMATION: Campylobacter alpha-2,3-sialyltransferase I (Cst-I)

; OTHER INFORMATION: from C. jejuni OH4384

US-10-735-419-48

Query Match 75.0%; Score 1701; DB 3; Length 322;

Best Local Similarity 100.0%; Pred. No. 1.6e-158;

Matches 322; Conservative 0; Mismatches 0; Indels 0; Gaps 0;

Qy 1

MTRTRMENELIVSKNMQNIIAGNGPSLKNINYKRLPREYDVFR CNQFYFEDKYY
LGKKI 60

|||||
Db 1
MTRTRMENELIVSKNMQNIILAGNGPSLKNINYKRLPREYDVFR CNQFYFEDKYY
LGKKI 60

Qy 61
KAVFFNPGVFLQQYHTAKQLILKNEYEIKNIFCSTFNL PFIESNDFLHQFYNFFPDA
KLG 120

|||||
Db 61
KAVFFNPGVFLQQYHTAKQLILKNEYEIKNIFCSTFNL PFIESNDFLHQFYNFFPDA
KLG 120

Qy 121
YEVIENTKEFYAYIKYNEIYFNKRITSGVYMCAIAIALGYKTIYLCGIDFYEGDVIY
PFE 180

|||||
Db 121
YEVIENTKEFYAYIKYNEIYFNKRITSGVYMCAIAIALGYKTIYLCGIDFYEGDVIY
PFE 180

Qy 181
AMSTNIKTIFPGIKDFKPSNCHSKEYDIEALKLLKSIYKVNIYALCDD SILANHFPL
SIN 240

|||||
Db 181
AMSTNIKTIFPGIKDFKPSNCHSKEYDIEALKLLKSIYKVNIYALCDD SILANHFPL
SIN 240

Qy 241
INNNFTLENKHNN SINDILLTDNTPGV SFYKNQLKADNKIMLNFYNILH SKDNLIK
FLNK 300

|||||
Db 241
INNNFTLENKHNN SINDILLTDNTPGV SFYKNQLKADNKIMLNFYNILH SKDNLIK
FLNK 300

Qy 301 EIAVLKKQTTQRAKARIQNHLS 322

|||||
Db 301 EIAVLKKQTTQRAKARIQNHLS 322